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NOTES ON THE EARLY HISTORY OF
DIPHThERIA
IN THE UNITED STATES.

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PAPER No. 3.

BY the kindness of Dr. S. S. Purple, President of the New York Academy of Medicine, whose library abounds in the most valuable books, pamphlets, etc., published in the earlier part of our history as a medical profession in this country, I have also had access to the Treatise of Dr. Samuel Bard, of New York city, on Diphtheria, entitled

“AN INQUIRY INTO THE NATURE, CAUSE, AND CURE OF THE ANGINA SUFFOCATIVA OR SORE-THROAT DISTEMPER, AS IT IS COMMONLY CALLED by the INHABITANTS OF THIS CITY [New York] AND COLONY. BY SAMUEL BARD, M. D., and Professor of Medicine IN KING’S COLLEGE.* New York, 1771. Dedicated to Cadwallader Colden, M. D. Esqr., His Majesty’s Lieut. Governor of the Province of New York.”

We will here premise that Dr. Bard’s little treatise was translated and published in Paris in 1810, and was known to Bretonneau, the so-called Father of the history of Diphtheria, who quoted from it.

Dr. Bard says: ‘In general this disease was confined to children, though some few grown persons, particularly women, had symptoms resembling it.

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"Unlike the promptness of the onset of scarlet fever, most of those who had it were observed to droop for several days, * * * and had a bloated livid countenance. Some had a few red eruptions here and there on the face; and in one case a small ulcer on the nose, whence oozed an ichor so sharp as to inflame and corrode the upper lip, * * * an uneasy sensation in the throat, but without any great soreness or pain, and upon examining it, the tonsils appeared swelled and slightly inflamed, *with a few white specks upon them, which in some increased so as to cover them all over with one general slough.* In a few the swelling was so great, as almost to close up the passage of the throat; but this, although a frequent symptom, did not invariably attend the disease; and some had all the other symptoms without it. The breath was either no ways offensive, or only slightly so, and the swallowing was very little, if at all, impeded.

"These mild symptoms, with a slight fever at night, continued in some for 5 or 6 days, without exciting alarm; in others, a difficulty of breathing came on within 24 hours, and was often increased to such a degree as to threaten immediate suffocation. In general the difficulty of breathing came on later, and increased more gradually.

"This stage of the disease was attended with a very great and sudden prostration of strength, a very remarkable hollow dry cough and a peculiar change in the voice; not easily described, but so singular, that a person who has once heard its could almost certainly know the disease again by hearing the patient speak, or cough. In some the voice was almost entirely lost. [*Croupous Diphtheria.*]

* * * These symptoms continued from 1 to 3 days; but by that time it was usual for them to be greatly increased in such as died.

* * * The difficulty of breathing increased so as to be frequently almost entirely obstructed, and the patient died apparently from suffocation. [*Croupous Diphtheria.*] This commonly happened before the end of the 4th or 5th day; in several within 36 hours from the time the difficulty of breathing first came on. One child however lived to the 8th day, and the day before he died his breath and what he coughed up was somewhat offensive; but this was the only instance in which I could discover anything like a disagreeable smell, either from the breath, or expectoration.

"Out of 16 cases attended with this remarkable suffocation in breathing, 7 died; 5 of them before the 5th day; the other 2 about the 8th. [*Croupous Diphtheria.*]

"In the family of Mr. W. W., one of the first to be attacked, 7 children were all affected, one after the other; 3 died. The 3 youngest had not the difficulty of breathing, but in its stead very troublesome ulcers behind the ears. These began with a few red pimples, which soon ran together, itched violently, and discharged a great deal of a very sharp ichor, so as to erode the neighboring parts, and in a few days spread all over the back part of the ear and down upon the neck. [*Cutaneous Diphtheria.*]

"After this, many other children had similar ulcers behind their ears and some of them seemed slightly affected with the difficulty of breathing, but it never became alarming while this discharge continued. These ulcers would continue for several weeks, and *appeared covered in some places with sloughs resembling those on the tonsils*; and at last grew very painful and uneasy. [*Cutaneous Diphtheria.*]

"In some cases they were attended with swellings of the glands under the jaw and behind the ears.

"I met with nothing like this complaint in adult persons, * * except the two following cases. They happened about the same time, and both were women; one of them had assisted in laying out two of the children that died of it. At first her symptoms resembled rather an inflammatory angina, but about the 3d day, the tonsils appeared covered with thick sloughs; her pulse was low and feeble, with a moist skin, a dejection of spirits, and some anxiety, though nothing like the difficult breathing of the children.

"The other was a soldier's wife, who had a slight fever for some time before she perceived any complaint in her throat. The tonsils were swelled and entirely covered with sloughs, *resembling those of the children*; but her breath was more offensive, and she had no suffocation."

Dr. Bard, at p. 10, also says: "I have had an opportunity of examining the nature and seat of this disease, from *dissection*, in three instances. One was a child 3 years old. Her first complaint was of an uneasiness in her throat, the tonsils were swelled and inflamed, *with large white sloughs* upon them. * * She had no great soreness in her throat, and could swallow with little or no difficulty. Her pulse was quick and soft; the heat of her body was not great; *her face was swelled*. She had considerable prostration of strength, with a very great difficulty of breathing, a very remarkable cough and a peculiar change in her voice. She drew her breath as if the

air was forced through too narrow a passage, so that she seemed incapable of filling her lungs, etc. [*Croupous Diphtheria.*]

"Upon examining the body, * * all the back parts of the throat and the root of the tongue were found covered and interspersed with sloughs, which still retained their whitish color. * * The epiglottis, which covers the windpipe was a little inflamed on its external surface; *but on the inner side together with the whole larynx was covered with the same tough white sloughs, as the tonsils or glands of the throat.*

"The whole trachea quite down to its division in the lungs, was lined with an inspissated mucus, in the form of a membrane, remarkably tough and firm. It was so tough as to require no inconsiderable force to tear it, but it came out whole from the trachea, which it left with much ease, and *resembled more than anything, both in thickness and appearance, a sheath of thin chamois-leather.* The inner membrane of the trachea was slightly inflamed. [*Croupous Diphtheria.*]

"Where the membrane extended into the lungs, it seemed to grow thin and finally to disappear. The lungs, too, appeared inflamed as in peripneumonic cases, etc.

"The second dissection I attended was of a child 7 years old, who had had all the symptoms with which this disease is commonly attended, except that the glands of the throat and upper parts of the windpipe were found entirely free from any complaint, and the disease seemed to be confined to the trachea only, which was lined with this tough mucus, inspissated so as to resemble a membrane. [*Pure Tracheal Diphtheria.*] We could trace it into the larger divisions of the trachea, and it was very evident that the smallest branches were obstructed by it. The lungs did not collapse as usual, but remained distended and felt remarkably firm and heavy, as if they were stuffed with the same mucus.

"The third was a child, 3 years old, who died in 36 hours after the difficult breathing first came on, yet even in this case I found the inspissated mucus lining the trachea." [*Tracheal Diphtheria.*]

Dr. Bard refers to Home's essay on croup, published some years before at Edinburg, under the name of Suffocatio Stridula, or Croup. He says: "Such a remarkable agreement in the symptoms of the two diseases, is in itself almost sufficient to determine them to be the same; but when we compare the appearances from dissection, it is

almost placed beyond a doubt. In eight cases, in which Dr. Home gives the dissection, the membrane I have described was constantly found, of the same appearance, firm consistence, loose adherence to the trachea, * * and it descended into the smallest branches of the wind-pipe, so as to choke these cavities and suffocate the patient. It is true Dr. Home does not mention the swelling of the tonsils, or the sloughs upon them as frequent symptoms; *but in some cases here they were also wanting*, and he mentions some in which the tonsils, together with all the glands about the root of the tongue were covered with mucus."

It will be seen that Dr. Bard almost made a diagnosis between Tracheal Diphtheria, and Membranous Croup. Dr. Bard continues: "Drs. Fothergill and Huxham have both written upon a disease, under the title of Malignant Ulcerous Sore Throat, which in some circumstances, particularly an erysipelatous or scarlatinous eruption with which it was attended and many other symptoms widely differed from the complaint I [Bard] have described. And yet they agree in so many other and such remarkable symptoms that I [Bard] cannot help entertaining the opinion, that they bear some relation to each other." Here Dr. Bard almost established a diagnosis between Scarlatinal Diphtheria, and pure Diphtheria.

"Do not these resemblances; their being in a great measure peculiar to children; their infectious nature; * * * the inflammation, swellings and sloughs on the tonsils and neighboring parts, unattended with any remarkable difficulty of swallowing; the discharge from the nose, and behind the ears; * * * but above all the peculiar difficulty in breathing, the hoarse dry cough, and the remarkable change in the voice, I [Bard] say, do not these symptoms, in which they all agree, justify an opinion, that although these diseases may specifically differ, yet determine them to be somewhat of the same class? And may not the erysipelatous or scarlatinous eruptions and putrid symptoms have belonged rather to the constitution of the air [from the filth of places, and the epidemic tendency of the times] than to the especial nature of the disease? Dr. Huxham particularly mentions that all the diseases of that season were attended with some kind of skin eruptions, and that too even in pleuritic and pneumonic disorders; so greatly did the constitution of the air or some other cause—seem disposed to produce eruptions of all sorts.

"Dr. Huxham particularly mentions too, the strangulated breath-

ing, and hoarse voice as characteristic symptoms, and quotes several Spanish and Italian physicians to the same effect: a strong proof that suffocation must have been among the most striking symptoms.

"It is likewise remarkable that some of the first writers, which Dr. Fothergill quotes, call it simply *Morbus Strangulatorius*, whilst Severinus connects the symptoms of strangulation and putrefaction together; and others again entirely omit the symptoms of suffocation and name it *Angina pestilans*, *gangrenosa*, or malignant ulcerous sore-throat. [All these writers confounded Diphtheria and Membranous Croup with Malignant Scarlet Fever.]

"The same differences of opinion have been entertained of its infectious nature: many declare it to be pestilential and contagious without any restriction; while some, particularly Cortesius, an Italian, consider it contagious, but only in a certain limited sense."

"It seems very evident that the disease which Dr. Fothergill treats of was frequently connected with affections of the trachea, and with remarkable suffocation and strangulation. [*Scarlatinous Diphtheria*.]

"Neither Dr. Fothergill or Huxham made any dissections of persons who died of the complaint they treat of; but the latter says pieces of the internal membrane of the wind-pipe were sometimes spit up; and Dr. Monro saw in the dissection of some children who died, at Edinburg, of a disease there considered to be putrid sore throat, the same membrane lining the trachea and descending to its minutest branches, similar to what is found in membranous croup. This membrane was not universal in all he examined, but whenever it was found the children had breathed in the same manner as those who were affected with croup; a pretty evident proof that these diseases are at least allied to and apt to run into each other."

Dr. Bard evidently thought, that croup and the ulcerous sore-throat-diseases were the same; only those described by Huxham and Fothergill were more putrid and malignant, like modern cases of Malignant Diphtheria.

It is very fortunate indeed that he described exactly what he saw; and separated his comparisons and reasonings from his facts.

"One of Dr. Fothergill's cases, a girl of 12 years, died in 24 hours, evidently from strangulation and not from putrid dissolution of the humors, and I [Bard] have been assured by some of the oldest practitioners of New York that they have seen, but a few years

ago, the same disease I have described, attended both with erysip-
elatous or scarlatinous appearances and highly putrid symptoms.
[*Probably Malignant Scarlet Fever, blended with Diphtheria.*]

"Upon the whole therefore, I (Dr. Bard) am led to conclude that the Morbus Strangulatorius of the Italians, the Croup of Dr. Home, the Malignant Ulcerous Sore-Throat of Huxham and Fothergill, and the disease I have described, and that first described by Dr. Douglass, of Boston, however they may differ in symptoms, do all bear an essential affinity and relation to each other; or are apt to run into each other, and in fact arise from the same Leven."

This is equivalent to saying that malignant scarlet fever, membranous croup and diphtheria are one and the same disease, and makes us doubly thankful that Dr. Bard gave us his facts separate from his theories.

"The disease I (Bard) have described appeared evidently to be of an infectious nature, and being drawn in by the breath of a healthy child, irritated the glands of the throat and wind-pipe. The infection did not seem to depend so much on any prevailing disposition of the air, as upon effluvia received from the breath of infected persons. This will account why the disorder sometimes went through a whole family and yet did not affect the next-door neighbors. Here we learn a very useful lesson, viz., to remove young children as soon as any one of them is taken with the disease, by which many lives have been saved and may again be preserved."

Dr. Bard could not hear of any one who had used blood-letting with success, or any remarkable benefit, and hardly ventured to prescribe it, especially as the mucous membrane of the trachea was not red and inflamed enough to produce pus, but only mucus, which then preternaturally thickened into the form of a membrane.

But mercury was then supposed to thin all the mucous secretions, particularly those of the mouth and throat, and to prevent the formation of this tough membrane, which was then thought to be the proximate cause of the disease and to readily account for all the other symptoms. Dr. Douglass, of Boston, first tried it and meeting with some success recommended it to others, (in all cases not attended with a natural salivation), in order to cast off the sloughs. He thought it as useful as in syphilitic ulcerations of the throat, and says a mild salivation aids "the disputation of the acrid iniquation of the juices in this distemper, the natural crisis of which seems to take

place from patent and open healthy or salutary emunctories of the throat and skin."

Dr. Bard says "there is a singularity in this gentleman's (Dr. Douglass) style; but his experience is founded on real, not imaginary cases," and he himself had seen a case of no trifling degree of severity which was cured by a very copious natural salivation.

Dr. Bard continues: "Dr. Douglass wrote upon this disease as it appeared in this country in 1735 and under his own immediate observation, which seems accurate and judicious. Calomel in doses of 30 to 40 grains, or indeed a much larger quantity has been given in 5 or 6 days, to a child of 3 or 4 years, not only without any ill effects, but to the manifest relief of breathing by promoting the casting off of the membranes and sloughs beyond any other medicine."

Dr. Bard, p. 29, gives the case of a little girl, aged $2\frac{1}{2}$ years, who had complained for a week of a sore throat and hoarseness; then she had some difficulty of breathing, which greatly increased. Her tonsils were swelled, inflamed and covered with sloughs of a yellowish color; her breath was not offensive, her pulse was small and fluttering, and her skin pale and clammy. She recovered in 15 days except from great weakness, and such a remarkable loss of voice that it was with great difficulty she could be heard, while the moment she attempted to drink she fell into a fit of coughing. "In 2 months, she could hardly walk alone, or speak above a whisper." [*Diphtheritic Paralysis.*]

From the above it is evident that Dr. Bard had met with many cases of pure pharyngeal and tracheal diphtheria. Also with some cases of membranous croup, not complicated with diphtheria, and a few cases of scarlatina anginosa, complicated with diphtheria. He came very near establishing a diagnosis between all these diseases, and far exceeded Bretonneau who confounded scarlet fever with diphtheria, and assumed that all cases of membranous croup were diphtheritic, and were always preceded by pharyngeal diphtheria.

His article is among the calmest, wisest, and most accurate that has ever been written on diphtheria, both before and since his time. The city of New York is justly proud of the honor and reputation of this great and honest medical observer.

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